CHAPTER INTRODUCTION

SECTION 1 What Is Supply?
SECTION 2 The Theory of Production
SECTION 3 Cost, Revenue, and Profit Maximization

CHAPTER SUMMARY

CHAPTER ASSESSMENT

Economics and You

About how many hours do you spend studying every night? How many hours would you study if you were paid $1 an hour? $10 an hour? If you will study more for a higher price, you are following the Law of Supply.
Chapter Objectives

Section 1: What Is Supply?

• Understand the difference between the supply schedule and the supply curve.
• Explain how market supply curves are derived.
• Specify the reasons for a change in supply.

Chapter Objectives

Section 2: The Theory of Production

• Explain the theory of production.
• Describe the three stages of production.

Chapter Objectives

Section 3: Cost, Revenue, and Profit Maximization

• Define four key measures of cost.
• Identify two key measures of revenue.
• Apply incremental analysis to business decisions.
For almost any good or service, the higher the price, the larger the quantity that will be offered for sale.

Reading Strategy
Graphic Organizer As you read the section, complete a graphic organizer similar to the one on page 113 of your textbook by describing how supply differs from demand.

Key Terms
- supply
- Law of Supply
- supply schedule
- supply curve
- market supply curve
- quantity supplied
- change in quantity supplied
- change in supply
- subsidy
- supply elasticity

Objectives
After studying this section, you will be able to:
- Understand the difference between the supply schedule and the supply curve.

Objectives (cont.)
- Explain how market supply curves are derived.
- Specify the reasons for a change in supply.

Applying Economic Concepts
Supply The Law of Supply tells us that firms will produce and offer for sale more of their product at a high price than at a low price. On another level, think about your own labor. You are the supplier, and the higher the pay, the more work you are willing to supply.

Introduction
- The concept of supply is based on voluntary decisions made by producers, whether they are proprietorships working out of home offices or large corporations operating out of downtown corporate headquarters.
- For example, a producer might decide to offer one amount for sale at one price and a different quantity at another price.
**Introduction (cont.)**

- **Supply**, then, is defined as the amount of a product that would be offered for sale at all possible prices that could prevail in the market. 
- Because the producer is receiving payment for his or her products, it should come as no surprise that more will be offered at higher prices. 
- This forms the basis for the **Law of Supply**, the principle that suppliers will normally offer more for sale at high prices and less at lower prices.

**An Introduction to Supply**

- All suppliers of economic products must decide how much to offer for sale at various prices—a decision made according to what is best for the individual seller. 
- What is best depends, in turn, upon the cost of producing the goods or services. 
- The concept of supply, like demand, can be illustrated in the form of a table or a graph.

**The Supply Schedule**

- **The supply schedule** is a listing of the various quantities of a particular product supplied at all possible prices in the market.

**The Supply Schedule (cont.)**

- The only real difference between a supply schedule and a demand schedule is that prices and quantities now move in the same direction for supply—rather than in opposite directions as in the case of demand.
The Individual Supply Curve

- The data presented in the supply schedule can also be illustrated graphically as an upward-sloping line.
- To draw it, we transfer each of the price-quantity observations in the schedule over to the graph, and then connect the points to form the curve.
- The result is a supply curve, a graph showing the various quantities supplied at each and every price that might prevail in the market.

The Individual Supply Curve (cont.)

- All normal supply curves slope from the lower left-hand corner of the graph to the upper right-hand corner.
- This is a positive slope and shows that if one of the values goes up, the other will go up too.

The Market Supply Curve

- The market supply curve shows the quantities offered at various prices by all firms that offer the product for sale in a given market.

Change in Quantity Supplied

- The quantity supplied is the amount that producers bring to market at any given price.
- A change in quantity supplied is the change in amount offered for sale in response to a change in price.
- Note that the change in quantity supplied can be an increase or a decrease, depending on whether more or less of a product is offered.
Change in Quantity Supplied (cont.)

- While the interaction of supply and demand usually determines the final price for the product, the producer has the freedom to adjust production.

Change in Supply

- Sometimes something happens to cause a change in supply, a situation where suppliers offer different amounts of products for sale at all possible prices in the market.

Change in Supply (cont.)

- When both old and new quantities supplied are plotted in the form of a graph, it appears as if the supply curve has shifted to the right, showing an increase in supply.

Change in Supply (cont.)

- For a decrease in supply to occur, less would be offered for sale at each and every price, and the supply curve would shift to the left.

- Changes in supply, whether increases or decreases, can occur for several reasons.
Cost of Inputs

- A change in the cost of inputs can cause a change in supply.
- Supply might increase because of a decrease in the cost of inputs, such as labor or packaging.
- If the price of the inputs drops, producers are willing to produce more of a product at each and every price, thereby shifting the supply curve to the right.

Cost of Inputs (cont.)

- If labor or other costs rise, producers would not be willing to produce as many units at each and every price.
- Instead, they would offer fewer products for sale, and the supply curve would shift to the left.

Productivity

- When management motivates its workers, or if workers decide to work more efficiently, productivity should increase.
- The result is that more is produced at every price, which shifts the supply curve to the right.
- On the other hand, if workers are unmotivated, untrained, or unhappy, productivity could decrease.
- The supply curve shifts to the left because fewer goods are brought to the market at every possible price.

Technology

- New technology tends to shift the supply curve to the right.
- The introduction of a new machine, chemical, or industrial process can affect supply by lowering the cost of production or by increasing productivity.
- When production costs go down, the producer is usually able to produce more goods and services at each and every price in the market.
Taxes and Subsidies

• Firms view taxes as costs.
• If the producer’s inventory is taxed or if fees are paid to receive a license to produce, the cost of production goes up.
• This causes the supply curve to shift to the left.
• Or, if taxes go down production costs go down, supply then increases and the supply curve shifts to the right.

Taxes and Subsidies (cont.)

• A subsidy is a government payment to an individual, business, or other group to encourage or protect a certain type of economic activity.
• Subsidies lower the cost of production, encouraging current producers to remain in the market and new producers to enter.
• When subsidies are repealed, costs go up, producers leave the market, and the supply curve shifts to the left.

Expectations

• Expectations about the future price of a product can also affect the supply curve.
• If producers think the price of their product will go up, they may withhold some of the supply, causing supply to decrease and the supply curve to shift to the left.
• On the other hand, producers may expect lower prices for their output in the future.
• In this situation, they may try to produce and sell as much as possible right away, causing the supply curve to shift to the right.

Government Regulations

• When the government establishes new regulations, the cost of production can be affected, causing a change in supply.
• In general, increased—or tighter—government regulations restrict supply, causing the supply curve to shift to the left.
• Relaxed regulations allow producers to lower the cost of production, which results in a shift of the supply curve to the right.
Number of Sellers

- A change in the number of suppliers causes the market supply curve to shift to the right or left.
- As more firms enter an industry, the supply curve shifts to the right. In other words, the larger the number of suppliers, the greater the market supply.
- If some suppliers leave the market, fewer products are offered for sale at all possible prices. This causes supply to decrease, shifting the curve to the left.

Number of Sellers (cont.)

- In the real world, sellers are entering the market and leaving the market all the time.
- Some economic analysts believe that, at least initially, the development of the Internet will result in larger numbers entering the market than in leaving.
- They point out that almost anyone with Internet experience and a few thousand dollars can open up his or her own Internet store.

Elasticity of Supply

- Supply elasticity is a measure of the way in which quantity supplied responds to a change in price.
- If a small increase in price leads to a relatively larger increase in output, supply is elastic.
- If the quantity supplied changes very little, supply is inelastic.

Three Elasticities

- The supply curve in Figure 5.4a is elastic because the change in price causes a relatively larger change in quantity supplied.
Three Elasticities (cont.)

- The supply curve in Figure 5.4b is inelastic because the change in price causes a relatively smaller change in quantity supplied.

Figure 5.4b

Inelastic Supply

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity</th>
</tr>
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<tbody>
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<td>5</td>
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<td>5</td>
<td>6</td>
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</tbody>
</table>

Three Elasticities (cont.)

- The supply curve in Figure 5.4c is a unit elastic supply curve because the change in price causes a proportional change in the quantity supplied.

Figure 5.4c

Unit Elastic Supply

<table>
<thead>
<tr>
<th>Price</th>
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<td>6</td>
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<td>5</td>
<td>8</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>

Three Elasticities (cont.)

Figure 5.4d

Change in Supply Due to Change in Price

<table>
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<tr>
<th>Type of Elasticity</th>
<th>Change in Quantity Supplied Due to a Change in Price</th>
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</thead>
<tbody>
<tr>
<td>Elastic</td>
<td>More than proportional</td>
</tr>
<tr>
<td>Unit Elastic</td>
<td>Proportional</td>
</tr>
<tr>
<td>Inelastic</td>
<td>Less than proportional</td>
</tr>
</tbody>
</table>

Determinants of Supply Elasticity

- The elasticity of a business’s supply curve depends on the nature of its production.

- If a firm can adjust to new prices quickly, then supply is likely to be elastic.

- If the nature of production is such that adjustments take longer, then supply is likely to be inelastic.
Determinants of Supply Elasticity (cont.)

- The elasticity of supply is different from the elasticity of demand in several important respects.
- First, the number of substitutes has no bearing on the elasticity of supply.
- In addition, considerations such as the ability to delay the purchase or the portion of income consumed have no relevance to supply elasticity even though they are essential for demand elasticity.

Section Assessment

Main Idea Using your notes from the graphic organizer activity on page 113 of your textbook, describe how supply is different from demand.

A Demand is the desire, ability, and willingness to buy, and deals with how prices affect consumer spending. Supply is the amount of a product for sale and deals with how prices affect quantity supplied.

Section Assessment (cont.)

Q Describe the difference between the supply schedule and the supply curve.

A Schedule: information on supply in table form
Curve: same information in graphic form

Section Assessment (cont.)

Q Describe how market supply curves are obtained.

A Determine amount produced by individual firms. Add numbers and plot on a graph.
Section Assessment (cont.)

**Q** List the factors that can cause a change in supply.

**A** Factors include cost of inputs, productivity, technology, number of sellers, taxes and subsidies, expectations, and government regulations.

Section Assessment (cont.)

**Q** Supply  Provide an example of an economic good whose producer would increase the quantity supplied if the price were to go up.

**A** Answers will vary.

Section Assessment (cont.)

**Q** Understanding Cause and Effect  According to the Law of Supply, how does price affect the quantity offered for sale?

**A** Sellers will offer more at higher prices and less at lower prices.

Section Close

Write a poem, a proverb, or a riddle that illustrates the relationship between price and supply.
Study Guide

Main Idea
A change in inputs—labor, machinery, tools—results in a change in production.

Reading Strategy
Graphic Organizer As you read about production, complete a graphic organizer similar to the one on page 122 of your textbook by listing what occurs during the three stages of production.

Study Guide (cont.)

Key Terms
- theory of production
- short run
- long run
- Law of Variable Proportions
  - production function
  - raw materials
  - total product
  - marginal product
  - stages of production
  - diminishing returns

Study Guide (cont.)

Objectives
After studying this section, you will be able to:

- Explain the theory of production.
- Describe the three stages of production.

Applying Economic Concepts
Diminishing Returns Has the quality of your work ever declined because you worked too hard at something? Sometimes you reach a stage where you still make progress but at a diminished rate.
Introduction

• Producing an economic good or service requires a combination of land, labor, capital, and entrepreneurs.

• The theory of production deals with the relationship between the factors of production and the output of goods and services.

• The theory of production generally is based on the short run, a period of production that allows producers to change only the amount of the variable input called labor.

Introduction (cont.)

• This contrasts with the long run, a period of production long enough for producers to adjust the quantities of all their resources, including capital.

• For example, Ford Motors hiring 300 extra workers for one of its plants is a short-run adjustment.

• If Ford builds a new factory, this is a long-run adjustment.

Law of Variable Proportions

• The Law of Variable Proportions states that, in the short run, output will change as one input is varied while the others are held constant.

• The law helps answer the question: How is the output of the final product affected as more units of one variable input or resource are added to a fixed amount of other resources?

The Production Function

• The Law of Variable Proportions can be illustrated by using a production function—a concept that describes the relationship between changes in output to different amounts of a single input while other inputs are held constant.
The Production Function (cont.)

- The production function can be illustrated with a schedule, such as the one in Figure 5.5a.
- The production schedule in the figure lists hypothetical output as the number of workers is varied from zero to 12.

The Production Function (cont.)

- The information may also be shown with a graph.
- In this example, only the number of workers changes. No changes occur in the amount of machinery used or the quantities of raw materials—unprocessed natural products used in production.

Total Product

- The second column in the production schedule shows total product, or total output produced by the firm.
- The numbers indicate that the plant barely operates when it has only one or two workers.
- As a result, some resources stand idle much of the time.

Total Product Rises

- As more workers are added, total product rises.
- More workers can operate more machinery, and plant output rises.
- Additional workers also means that the workers can specialize.
- For example, one group runs the machines, another handles maintenance, and a third group assembles the products.
- By working in this way—as a coordinated whole—the firm can be more productive.
Total Product Slows

• As even more workers are added output continues to rise, but it does so at a slower rate until it can grow no further.  
• Finally, the addition of the eleventh and twelfth workers causes total output to go down because these workers just get in the way of the others.  
• Although the ideal number of workers cannot be determined until costs are considered, it is clear that the eleventh and twelfth workers will not be hired.

Marginal Product

• Marginal product is the extra output or change in total product caused by the addition of one more unit of variable input.

Three Stages of Production

• When it comes to determining the optimal number of variable units to be used in production, changes in marginal product are of special interest.  
• The three stages of production—increasing returns, diminishing returns, and negative returns—are based on the way marginal product changes as the variable input of labor is changed.  
• In Stage I, the first workers hired cannot work efficiently because there are too many resources per worker.

Three Stages of Production (cont.)

• As the number of workers increases, they make better use of their machinery and resources.  
• As long as each new worker hired contributes more to total output than the worker before, total output rises at an increasingly faster rate.  
• Because marginal output increases by a larger amount every time a new worker is added, Stage I is known as the stage of increasing returns.
Three Stages of Production (cont.)

- As soon as a firm discovers that each new worker adds more output than the last, the firm is tempted to hire another worker.
- In Stage II, the total production keeps growing, but by smaller and smaller amounts.
- Any additional workers hired may stock shelves, package parts, and do other jobs that leave the machine operators free to do their jobs.
- The rate of increase in total production, however, is now starting to slow down.

Three Stages of Production (cont.)

- Stage II illustrates the principle of diminishing returns, the stage where output increases at a diminishing rate as more units of a variable input are added.
- In the third stage, the firm has hired too many workers, and they are starting to get in each other’s way.
- Marginal product becomes negative and total plant output decreases.
- Most companies do not hire workers whose addition would cause total production to decrease.

Section Assessment

**Q** Main Idea Using your notes from the graphic organizer activity on page 122, explain how production is affected by a change in inputs.

**A** As input changes, production of outputs also changes. First, each input will cause an increase. Then, each input will cause an increase, but in increasingly smaller increments. Finally, each input will cause a decrease.

Section Assessment (cont.)

**Q** Describe the relationship on which the theory of production is based.

**A** The theory of production states that changing factors of production (inputs) will change the output of goods and services.
Section Assessment (cont.)

Q Explain how marginal product changes in each of the three stages of production.

A In Stage I, marginal product increases. In Stage II, marginal product continues to increase, but at a slower rate. In Stage III, marginal product becomes negative.

Click the mouse button or press the Space Bar to display the answer.

Section Assessment (cont.)

Q Identify what point will eventually be reached if companies continue adding workers.

A Workers will be in each other's way and output will decrease.

Click the mouse button or press the Space Bar to display the answer.

Section Assessment (cont.)

Q Diminishing Returns Provide an example of a time when you entered a period of diminishing returns or even negative returns. Explain why this might have occurred.

A Answers will vary.

Click the mouse button or press the Space Bar to display the answer.

Section Assessment (cont.)

Q Sequencing Information You need to hire workers for a project you are directing. You may add one worker at a time in a manner that will allow you to measure the added contribution of each worker. At what point will you stop hiring workers? Relate this process to the three stages of the production function.

A Stop hiring workers just before Stage II begins. In Stage I, as each worker is added, total product and marginal product increase. In Stage II, as each worker is added, marginal product is positive but decreasing. Therefore, the marginal product is greatest just before Stage II.

Click the mouse button or press the Space Bar to display the answer.
Section Close

Discuss the following statement:
The most important economic concept for business managers to understand is that of marginal product.

Study Guide

Main Idea
Profit is maximized when the marginal costs of production equal the marginal revenue from sales.

Reading Strategy
Graphic Organizer As you read the section, complete a graphic organizer similar to the one on page 127 of your textbook by explaining how total revenue differs from marginal revenue. Then provide an example of each.

Study Guide (cont.)

Key Terms
- fixed cost
- overhead
- variable cost
- total cost
- marginal cost
- e-commerce
- total revenue
- marginal revenue
- marginal analysis
- break-even point
- profit-maximizing quantity of output
Click the Speaker button to listen to the Cover Story.

Click the speaker button or press the Space Bar to display the information. Section 3 begins on page 127 of your textbook.

Objectives

After studying this section, you will be able to:

- Define four key measures of cost.
- Identify two key measures of revenue.
- Apply incremental analysis to business decisions.

Applying Economic Concepts

Overhead

Overhead is one type of fixed cost that we try to avoid whenever we can. How can overhead change the way people do business?

Study Guide (cont.)

Introduction

- Overhead is one of many different measures of costs.

Measures of Cost

- Because the cost of inputs influences efficient production decisions, a business must analyze costs before making its decisions.
- To simplify decision making, cost is divided into several different categories.
- The first category is fixed cost—the cost that a business incurs even if the plant is idle and output is zero.

Measures of Cost (cont.)

- It makes no difference whether the business produces nothing, very little, or a large amount. Total fixed cost, or overhead, remains the same.
- Fixed costs include salaries paid to executives, interest charges on bonds, rent payments on leased properties, and local and state property taxes.
- Fixed costs also include depreciation, the gradual wear and tear on capital goods over time and through use.
The nature of fixed costs is illustrated in the fourth column of the table below.

<table>
<thead>
<tr>
<th>Measures of Cost (cont.)</th>
</tr>
</thead>
</table>

- Another kind of cost is **variable cost**, a cost that changes when the business rate of operation or output changes.
- While fixed costs generally are associated with machines and other capital goods, variable costs generally are associated with labor and raw materials.
- The **total cost** of production is the sum of the fixed and variable costs.
- Total cost takes into account all the costs a business faces in the course of its operations.

- Another category of cost is **marginal cost**—the extra cost incurred when a business produces one additional unit of a product.
- Because fixed costs do not change from one level of production to another, marginal cost is the per-unit increase in variable costs that stems from using additional factors of production.

- The cost and combination, or mix, of inputs affects the way businesses produce.
- The examples on the following slides illustrate the importance of costs to business firms.
Self-Service Gas Station

- Consider the case of a self-serve gas station with many pumps and a single attendant who works in an enclosed booth.
- This operation is likely to have large fixed costs, such as the cost of the lot, the pumps and tanks, and the taxes and licensing fees paid to state and local governments.
- The variable costs, on the other hand, are relatively small.

Self-Service Gas Station (cont.)

- When all costs are included, however, the ratio of variable to fixed costs is low.
- As a result, the owner may operate the station 24 hours a day, seven days a week for a relatively low cost.

Internet Stores

- Many stores are using the Internet because the overhead, or the fixed cost of operation, is so low.
- An individual engaged in e-commerce—electronic business or exchange conducted over the Internet—does not need to spend large sums of money to rent a building and stock it with inventory.

Measures of Revenue

- Businesses use two key measures of revenue to find the amount of output that will produce the greatest profits.
- The total revenue is the number of units sold multiplied by the average price per unit.
- The second, and more important, measure of revenue is marginal revenue, the extra revenue associated with the production and sale of one additional unit of output.
Measures of Revenue (cont.)

- The marginal revenues are determined by dividing the change in total revenue by the marginal product.
- Marginal revenue is not always constant. Businesses often find that marginal revenues start high and then decrease as more and more units are produced and sold.

Marginal Analysis

- Economists use marginal analysis, a type of cost-benefit decision making that compares the extra benefits to the extra costs of an action.
- Marginal analysis is helpful in a number of situations, including break-even analysis and profit maximization.
- The break-even point is the total output or total product the business needs to sell in order to cover its total costs.

Marginal Analysis (cont.)

- A business wants to do more than break even, however. It wants to make as much profit as it can.
- The owners of the business can decide how many workers and what level of output are needed to generate the maximum profits by comparing marginal costs and marginal revenues.
- In general, as long as the marginal cost is less than the marginal revenue, the business will keep hiring workers.

Marginal Analysis (cont.)

- When marginal cost is less than marginal revenue, more variable inputs should be hired to expand output.
- The profit-maximizing quantity of output is reached when marginal cost and marginal revenue are equal.
Section Assessment

Q **Main Idea** Using your notes from the graphic organizer activity on page 127, describe how cost affects total revenue.

A The cost of inputs influences supply. The supply influences the number sold. The number sold multiplied by the average price per unit is the total revenue.

Section Assessment (cont.)

Q List the four measures of cost.

A The four measures of cost are fixed cost, variable cost, total cost, and marginal cost.

Section Assessment (cont.)

Q Describe the two measures of revenue.

A The total revenue is the number of units sold multiplied by the average price per unit. The marginal revenue is the extra revenue associated with the production and sale of one additional unit of output.

Section Assessment (cont.)

Q Explain the use of marginal analysis for break-even and profit-maximizing decisions.

A By comparing the marginal revenue and the marginal cost of adding units of variable input, break-even and profit-maximizing points can be established.
Section Assessment (cont.)

Q Overhead How might overhead affect the price of a new car?

A A car manufacturer or dealer with high overhead may need to charge more.

Understanding Cause and Effect

Q Many oil-processing plants operate 24 hours a day, using several shifts of workers to maintain operations. How do you think a plant's fixed and variable costs affect its decision to operate around the clock?

A When variable costs are small relative to fixed costs, the additional cost of operating around the clock is low.

Section Close

Consider which, if any, of society’s economic goals are furthered by profit maximization.
Section 1: What Is Supply?

- **Supply** is the quantities of output that producers will bring to market at each and every price. Supply can be represented in a supply schedule, or graphically as a **supply curve**.
- The **Law of Supply** states that the quantities of an economic product offered for sale vary directly with its price. If prices are high, suppliers will offer greater quantities for sale. If prices are low, they will offer smaller quantities for sale.
- The **market supply curve** is the sum of the individual supply curves.
- A change in supply is a change in the quantity that will be supplied at each and every price. An increase in supply is presented graphically as a shift of the supply curve to the right, and a decrease in supply appears as a shift of the supply curve to the left.
- Changes in supply can be caused by a change in the cost of inputs, productivity, new technology, taxes, **subsidies**, expectations, government regulations, and number of sellers.
- **Supply elasticity** describes how a change in quantity supplied responds to a change in price.

Section 2: The Theory of Production

- The **theory of production** deals with the relationship between the factors of production and the output of goods and services.
- The theory of production deals with the **short run**, a production period so short that only the variable input (usually labor) can be changed. This contrasts to the **long run**, a production period long enough for all inputs—including capital—to vary.
- The **Law of Variable Proportions** states that the quantity of output will vary as increasing units of a single input are added. This law is presented graphically in the form of a **production function**.
Section 2: The Theory of Production (cont.)

- The two most important measures of output are total product and marginal product, the extra output gained from adding one additional unit of input.
- Three stages of production—increasing returns, diminishing returns, and negative returns—show how marginal product changes when additional variable inputs are added. Production takes place in Stage II under conditions of diminishing returns.

Section 3: Cost, Revenue, and Profit Maximization

- Four important measures of cost exist: total cost, which is the sum of fixed cost and variable cost, and marginal cost, which is the increase in total cost that stems from producing one additional unit of output.
- The mix of variable and fixed costs that a business faces affects the way the business operates.
- The key measure of revenue is marginal revenue, which is the change in total revenue when one more unit of output is sold.

Section 3: Cost, Revenue, and Profit Maximization (cont.)

- The profit-maximizing quantity of output occurs when marginal cost is exactly equal to marginal revenue. Other quantities of output may yield the same profit, but none yield more.
### Identifying Key Terms

**C.** a production cost that does not change as total business output changes

**B.** decision making that compares the additional costs with the additional benefits of an action

**A.** associated with Stage II of production

<table>
<thead>
<tr>
<th>A. depreciation</th>
<th>G. production function</th>
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<tr>
<td>B. diminishing returns</td>
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</tr>
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<td>D. marginal analysis</td>
<td>J. variable cost</td>
</tr>
<tr>
<td>E. marginal product</td>
<td>K. overhead</td>
</tr>
<tr>
<td>F. marginal revenue</td>
<td>L. total product</td>
</tr>
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</table>

### Identifying Key Terms (cont.)

**J.** a production cost that changes when output changes

**G.** a graphical representation of the theory of production

**E.** the additional output produced when one additional unit of input is added

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<td>L. total product</td>
</tr>
</tbody>
</table>

### Identifying Key Terms (cont.)

**F.** change in total revenue from the sale of one additional unit of output

**A.** the gradual wearing out of capital goods

**I.** the sum of variable and fixed costs

<table>
<thead>
<tr>
<th>A. depreciation</th>
<th>G. production function</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. diminishing returns</td>
<td>H. profit-maximizing</td>
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<tr>
<td>C. fixed cost</td>
<td>I. total cost</td>
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<tr>
<td>D. marginal analysis</td>
<td>J. variable cost</td>
</tr>
<tr>
<td>E. marginal product</td>
<td>K. overhead</td>
</tr>
<tr>
<td>F. marginal revenue</td>
<td>L. total product</td>
</tr>
</tbody>
</table>

### Identifying Key Terms (cont.)

**L.** total output produced by a firm

**K.** total fixed costs

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<td>F. marginal revenue</td>
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</tr>
</tbody>
</table>
Reviewing the Facts

Q Describe what is meant by supply.
A quantities of a product offered for sale at all possible prices that could prevail in the market.

Reviewing the Facts (cont.)

Q Distinguish between the individual supply curve and the market supply curve.
A Individual supply curves show quantities of a product supplied at each and every market price; market supply curves show quantities of a product at various prices by all firms that market the product.

Reviewing the Facts (cont.)

Q Explain what is meant by a change in quantity supplied.
A the change in the amount of a product offered for sale in response to a price change.

Reviewing the Facts (cont.)

Q Identify the factors that cause a change in supply.
A cost of inputs, productivity, technology, number of sellers, taxes and subsidies, expectations, government regulations.
Reviewing the Facts (cont.)

Q Describe the Law of Variable Proportions.
A In the short run, output will change as one input is varied while others remain constant.

Reviewing the Facts (cont.)

Q Explain the difference between total product and marginal product.
A Total product is total output produced by a firm; marginal product is extra output generated by adding one more unit of variable input.

Reviewing the Facts (cont.)

Q Identify the three stages of production.
A increasing returns, diminishing returns, and negative returns

Reviewing the Facts (cont.)

Q Describe the relationship between marginal cost and total cost.
A Marginal cost is the change in total cost incurred by producing one additional unit of a product. Total cost is the sum of fixed and variable costs.
Chapter Assessment 13
Click the mouse button or press the Space Bar to display the answer.

Reviewing the Facts (cont.)

Q Identify four measures of cost.
A total cost, fixed cost, variable cost, marginal cost

Chapter Assessment 14
Click the mouse button or press the Space Bar to display the answer.

Reviewing the Facts (cont.)

Q Describe one practical application of cost principles.
A Answers should reflect an understanding of the importance of cost to business firms.

Thinking Critically
Click the mouse button or press the Space Bar to display the answer.

Making Comparisons Create a chart like the one on page 134 of your textbook to help you explain how supply differs from demand.
A Charts should reflect an understanding of supply and demand.

Thinking Critically (cont.)
Click the mouse button or press the Space Bar to display the answer.

Making Generalizations Why might production functions tend to differ from one firm to another?
A Because different firms have different technologies and use different amounts of variable inputs, the production function for each firm will vary.
Thinking Critically (cont.)

Q Understanding Cause and Effect
Explain why e-commerce reduces fixed costs.

A Fixed costs, like employee salaries, interest charges on bonds, rent payments, and property taxes do not apply to e-commerce. Web access and software are the only fixed costs for e-commerce businesses.

Applying Economic Skills

Q Supply According to the Law of Supply, what will happen to the number of products a firm offers for sale when prices go down? What will happen to the cost of additional units of production when a firm starts having diminishing returns? What will happen to the number of products a firm will offer for sale if its cost of production increases while prices remain the same?

A When prices go down, the amount offered for sale will also go down. Each unit of production will cost more. There will be a decrease in supply.

Applying Economic Skills (cont.)

Q Marginal Analysis Give an example of a recent decision you made in which you used the tools of marginal analysis.

A Examples should reflect an understanding of marginal analysis.

Q Suppose economists predict that the price of oil will rise by 25 percent in the next two years. How might this affect the number of wildcatters—people who drill for oil in hopes of finding new supplies?

A The number of wildcatters would likely go up, as more people would seek oil to sell at higher prices.
Focus Activity 2.1
Continued on next slide.

Focus Activity 3.1
Continued on next slide.

Focus Activity 2.2

Focus Activity 3.2

The Theory of Production

1. What are the four factors of production?
   - Land
   - Labor
   - Capital
   - Entrepreneurship

2. How does the diagram show a cause-effect relationship?
   - A change in one or more of the factors of production will lead to a change in the output of goods or services.

Costs, Revenues, and Profits

1. How are total costs calculated?
   - Total costs = Fixed Costs + Variable Costs

2. How is profit related to costs and revenues?
   - Profit = Total Revenue - Total Costs

Units Sold x Average Price Per Unit = Total Revenue
- Profit or Loss = Total Revenue - Total Costs
Monitor television newscasts and newspapers to find three stories that discuss supply. Write a brief explanation of how the situation in each story might affect price and supply.

Explore online information about the topics introduced in this chapter.

Click on the Connect button to launch your browser and go to the Economics Principles and Practices Web site. At this site, you will find interactive activities, current events information, and Web sites correlated with the chapters and units in the textbook. When you finish exploring, exit the browser program to return to this presentation. If you experience difficulty connecting to the Web site, manually launch your Web browser and go to http://epp.glencoe.com

Explore online information about the topics introduced in this chapter.

Click on the Connect button to launch your browser and go to the BusinessWeek Web site. At this site, you will find up-to-date information dealing with all aspects of economics. When you finish exploring, exit the browser program to return to this presentation. If you experience difficulty connecting to the Web site, manually launch your Web browser and go to http://www.businessweek.com

Measures of Cost  Variable costs represent expenses a corporation incurs that change with that company’s level of business activity. Fixed costs represent expenses a corporation incurs that remain relatively stable despite a change in the level of that company’s business activity. Expense items which generally remain fixed for any given reporting period include rent, depreciation, property tax, and executive salaries.
Master Marketer Giving a gift to a business partner from another culture must be considered carefully. Some American businesspeople decided to send crystal clocks to their Chinese business partners. Luckily, before the gifts were sent, the Americans discovered that clocks are seen as symbols of death in China.

Oil Supply OPEC, the Organization of Petroleum Exporting Countries, uses adjustments in oil production to counter changes in prices. In the late 1990s, just after OPEC agreed to increase production, the Asian economy unexpectedly collapsed. With demand down, an oil glut resulted, and oil prices fell sharply. In time, the members of OPEC agreed to cut production, leading to a rise in oil prices.

FYI 3

All costs are variable in the long run.

Technology and Farming Many U.S. farmers now use computers, the Internet, and e-mail to get information about the supply of crops that will come to market, prices offered, yield per acre, and other data. This information helps farmers decide how much to plant and where to sell their products. State agricultural departments and universities have Web sites to help farmers use electronic information effectively.
The price of the average desktop computer shrank by 17.3% in just one year. As prices continue to fall, computer makers are scrambling to find other ways to make a profit. Read the BusinessWeek Newsclip article on page 126 of your textbook. Learn how computer makers are finding other ways to make a profit.

Understanding Cause and Effect

Q Why are companies moving away from producing PCs?

A The price of PCs has been plummeting for the past two years. Companies are not producing as many PCs because they are not making much profit from them.

New Directions for PC Markets

Q Making Generalizations What are some companies doing in order to stay competitive in the computer industry?

A Some companies are developing e-commerce business and producing non-PC products like cell phones and Web access machines.
What is the law of supply?

The law of supply states that when prices of a product are higher, sellers will supply a larger quantity of the product.

Outlining may be used as a starting point for a writer. The writer begins with the rough shape of the material and gradually fills in the details in a logical manner. You may also use outlining as a method of note taking and organizing information as you read.
Learning the Skill (cont.)

- Write subtopics under each main idea. Label these ideas with capital letters.
- Write supporting details for each subtopic. Label these with Arabic numerals.
- Each level should have at least two entries and should be indented from the level above.
- All entries use the same grammatical form, whether phrases or complete sentences.

Outlining

Practicing the Skill

- On a separate sheet of paper, copy the outline on page 132 of your textbook of the main ideas in the first part of Section 1 of Chapter 5.
- Then use your textbook to fill in the missing subtopics and details.

Profiles in Economics 1.1

Click a picture on the following slide to learn more about Richard Sears, Milton Hershey, or John Johnson. Be prepared to answer the questions that follow.
Making Generalizations  Explain how persistence played a role in the success of each of these men.

Answers will vary. Sears persisted for 24 years before he opened his first retail store; Hershey was poor, uneducated, a multiple-business failure, and broke before he achieved success; Johnson persisted in the face of racism.

For Further Research  Find out the etymology of entrepreneur and explain why the word is used as it is today.

The word entrepreneur comes from the French, and it means "one who undertakes some task." Its deeper root is Latin, originating in words that mean "to grasp" or "to seize." It shares these roots with the word "enterprise." Entrepreneurship thus means something akin to seizing an opportunity. Today, it denotes one who seizes a business opportunity.